

#### FACILITY MANAGEMENT OFFICE

### SCOPE OF WORK

DATE: March 12, 2021

PROJECT: Delta barrier installation work in Singh House

LOCATION: US Embassy, Maharajgunj

Embassy of The United States of America, Maharajgunj, Kathmandu, Nepal requests a proposal for the project as described below.

### 1. General Requirement

- The contractor shall be responsible for Trench work, provide drainage system, installation, testing
  and commissioning of Delta Barriers system. Contractors shall take accurate measurement during
  site survey before submitting the quotation.
- The awarded contractor needs to provide design of a Trenched, drainage system for the Delta Barrier, by showing all connectivity meeting relevant standards. (subject to COR comment)
- All materials/equipment used must be certified and must be submitted for approval by COR prior to installation. The contractor shall use high quality construction materials as specified.
- The contractor shall be responsible for the supply of all machinery, labor, and materials necessary for the completion of the works. The contractor is responsible for all the contractor owned tools and equipment at all times and shall provide a lockable tool and material box for their operatives if required.
- Contractor should have min. 5 years' experience in installation, commissioning & troubleshooting including preventive maintenance in civil and electromechanical field. Should be able to install as per US Embassy schedule and should be flexible in scheduling as per Embassy requirement.
- Should include at least a 1-year warranty on workmanship including all its parts and devices, installation and all accessories related to the barrier.
- Should be able to fix any kind of problem in the same day or within 24 hours after received call from embassy on an urgent basis related to workmanship on delta barrier system within warranty period.
- Contractor is responsible for supplying and installation for all kinds of work related to the delta barrier installation i.e. mason work, painting work, electrical work, fabrication work, gate repairing (if needed), ground repairing (if needed) etc.
- Contractor is responsible to furnish all required hand tools, ladders, safety gears transportation and equipment including supervision related to the job.

 Contractor shall be responsible for the workmanship of all Subcontractors engaged in the Project, and for Subcontractors compliance with the terms of this scope of Work. The Contractor is also responsible for the behavior of all Subcontractors while on Embassy Property.

## 2. System configuration

Government will furnish the Delta Barrier (Model: HD200 High Security Barrier) for the installation by the Contractor. The Government Material (GM) is stored at Phora Durbar. The contractor shall move, uncrate, assemble, and install the GM. GM shall be uncrated and inspected by the contractor in the presence of the Contracting Officer's Representative (COR) to determine any damaged or missing parts. The contractor shall be responsible for damage or loss occurring after this inspection and also be responsible for transportation of all GM to work location (Singh Property). The contractor shall notify the COR fourteen days in advance of the date the GM is needed. Any GM not incorporated in the work shall be returned to the Government and placed in storage at Singh Property as directed by the COR. Below is the specification of the Delta barrier system that provided to contractor:

- Barricade Construction. Each Barricade shall be a shallow frame below grade assembly that can be cast in a foundation of 24 inches [588mm] in depth. The assembly shall have a heavy steel ramp weldment capable of being rotated to an above grade position. The guard position shall present a formidable obstacle to approaching vehicles. Upon impact, forces shall be first absorbed by the Ramp weldment and then transmitted to the foundation of the unit. In the full guard position the height of the Barricade shall be 30 inches as measured from the top of the foundation frame to the top of the barrier Ramp
- Barricade Length. A Barrier shall have a length of 108 inch. This is the moving plate length which may be customized. The foundation depth of the frame of the Barrier shall be 24 inches deep.
- Safety / Visibility Panel. Descending from the front edge of the Barrier Ramp shall be a rigid panel that fully encloses the front face and sides of the barricade. The Safety/Visibility Panel shall have yellow/white (alternately yellow/black, or red/white) diagonal stripes. The panel and side skirts, mounted on the Ramp Weldment shall be readily removable to facilitate Barrier Maintenance and Service using standard hand tools. The roadway plate shall have a non-skid roadway surface. The barricade shall safely handle heavy truck traffic with loads in compliance with AASHTO HS15 and Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-96.
- Hydraulic Power Unit (HPU)
  - O Hydraulic Circuit Unit shall consist of an electrically driven hydraulic pump, which shall pressurize a high-pressure manifold connected to a hydraulic accumulator. Electrically actuated valves shall be installed on the manifold to allow oil to be directed to the hydraulic cylinders to raise and lower the Barricade. The hydraulic circuit shall include all necessary control logic devices, interconnect lines and valves to override and lock out the normal speed control valve(s) for emergency fast operation of the Barricade(s).
  - Main Power. The electric motor driving the hydraulic pump shall be fed from (specify Single Phase 220 Volt/3-Phase 400 Volt, Frequency 50 hertz). Motor shall be sufficiently sized for the expected number of Barricade operations.
  - Power Off Operation. The accumulator shall be sized to allow 2 specify number of halfcycle operations required) of a single Barricade in the event of a power outage. Enhanced power off capability can be selected as an option. The control valves shall also be manually

- operable in this case. A hand pump shall be furnished to allow the Barricades to be raised manually in the event of a prolonged power interruption.
- Construction. The hydraulic power unit and accessories shall be mounted and wired on an integral steel skid. The HPU shall fit in an envelope 60 inches W x 36 inches D x 60 inches H [1524 mm W x 914 mm D x 1524 mm H]. The HPU shall be mounted indoors or in an optional weather resistant enclosure. There should be power and signal conduit connection between barrier to control booth.

### • Control and logic circuits

The following circuits and control stations shall be furnished:

- Control Circuit. A control circuit shall be provided to interface between all Barricade control stations and the hydraulic power unit. This circuit shall contain all relays, timers, logic circuits and other devices necessary for the Barricade operation.
- O Voltage. The control circuit shall operate from a 220-volt, 50 Hz, 10-amp supply. An internally mounted power supply shall convert this to 24 VDC for logic functions, all external control stations, indicator lights and valve actuation. The control circuit shall be mounted in a general-purpose enclosure. All device interconnect lines shall be run to terminal strips.
- O A remote-control slave panel shall also be supplied to control the Barricade operation. This panel shall have a "panel on" light that is lit when enabled by a switch on the remote-control master panel. Buttons to raise or lower each Barricade (or set) shall be provided. Barricade "up" and "down" indicator lights shall be included for each Barricade (or set). The emergency fast operate (EFO) feature shall be operated from a pushbutton larger than the normal controls (optionally a covered toggle switch). When the slave panel EFO is pushed, an EFO "active" lamp will light and operation of the Barricade(s) will not be possible until reset at the master panel.
- The remote-control panel(s) shall operate on 24 VDC. The remote-control station(s) shall be housed in a standard 19-inch electronics rack type surface mount panel with all devices wired to a terminal strip on the back.
- Safety Interlock Detector: A vehicle detector safety loop shall be supplied to prevent the Barricade from being accidentally raised under an authorized vehicle. The detector shall utilize digital logic with fully automatic tuning for stable and accurate long-term reliability. The output of the detector shall delay any Barricade rise signal (except for EFO command) when a vehicle is over the loop.
- Normal Operation: Each individual barrier shall be capable of being raised or lowered in 3 to 7 seconds (customer adjustable) Barricade Ramp direction shall be instantly reversible at any point in its cycle from the control stations.
- Emergency Fast Operation: Barricade (s) shall rise to the guard position from fully down in approximately 1.0 seconds maximum when the emergency fast operate button is pushed provided the system has not previously been exhausted by power off or manual operation or high speed cycle rates. Barricade (s) shall remain in the up and locked position (normal up/down buttons inoperable) until the EFO condition is reset. Faster closing times are available and dependent on the configuration.
- Frequency of operation: Barricade (s) shall be capable of 50-60 (specify up to 120 cycles per hour) complete up/down cycles per hour.

#### 3. Contract administration:

- The Contractor shall not conduct any work that is beyond this Statement of Work and accompanying specifications unless directed in writing by the Contracting Officer [CO]. Any work done by the Contractor beyond this SOW and accompanying specifications without direction from the CO will be at the Contractor's own risk and at no cost to the Embassy.
- The Contracting Officer shall provide a Notice to Proceed [NTP] to the Contractor. No work shall be initiated until the NTP is issued by the CO.
- The Embassy does not make representations or warranties of whatsoever kind or nature, either expressed or implied, as to the quality, level of completion, accuracy, extent of compliance with the standards, codes and requirements described or referred to in this SOW, or the extent of coordination between or among the documents provided to the Contractor.
- The Embassy's review, approval, or acceptance of, nor payment for the services required under this contract shall be construed to operate as a waiver of any rights under this contract or any cause of action against the Contractor arising out of the performance of this contract.
- The Embassy has the right to inspect and test all services called for by the contract, to the extent practicable at all time and places during the term of the contract.
- The Contracting Officer has the authority to issue a temporary stop order during the execution of
  any phase of this SOW. This authority may be executed when the Embassy requires time for
  official functions or is in possession of specific credible information indicating that the lives of
  Embassy personnel are immediately threatened, and that the execution of the project will increase
  the Embassy's vulnerability. The Contractor shall promptly notify the CO that work has been
  stopped.
- If any of the Contractor's services do not conform to the contract requirements, the COR may require the Contractor to perform the services again in conformity with the contract requirements. The Embassy may by contract or otherwise, perform the services and charge the Contractor any cost incurred by the Embassy that is directly related to the performance of such service or terminate the contract for default.
- The Embassy has the right to terminate this contract of convenience at any time in whole, or from time to time, if the Contracting Officer determines it is in the interest of the Embassy.
- The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all installation and other services furnished under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its construction and other services.
- The Contractor shall identify a Project Site Manager who shall be responsible for the overall management of the project and shall represent the Contractor on the site during installation. The Project Site Manager shall be approved by the COR.
- The Project Site Manager shall attend all project meetings, prepare Status Reports on the project and submit them to the COR. Status Reports shall contain meeting minutes, accomplishments, arising concerns and proposed solutions, any proposed changed orders, and any other pertinent information required to report the progress of performance.
- All documentation produced for this project will become the ownership of the Embassy at the completion of this project. The Contractor shall verify that all materials, equipment, and systems

- provide operational dependability. The Contractor assures the completed installation shall be easily maintained or replaced with readily available materials and services.
- Any cost associated with services subcontracted by the Contractor shall be borne by and be the complete responsibility of the Contractor under the fixed price of this contract
- The Contractor shall be and remain liable to the Embassy in accordance with applicable law for all damages to the Embassy caused by the Contractor's negligent performance of any of the services furnished under this contract. The rights and remedies for the Embassy provided for under this contract are in addition to any other rights and remedies provided by law.
- The Contractor shall visit the site to fully be informed of all the conditions and limitations applied to the work and submit a firm fixed price cost proposal for all the work. No subsequent cost allowance will be made to the Contractor for neglect of the existing conditions.
- The Contractor shall prepare and submit a Quality Control Schedule [QCS] and Project Safety Plan [PSP] to address the project. The QCS and PSP are intended to document the entire project from beginning to end.
- Submit a copy of a Contractor's Supply and Installation Guarantee covering the awning, work, labor and installation for a period of ONE [1] year at no cost to the Embassy signed by the Contractor.

## 4. Concrete note and recommended specification:

- Contractor shall verify and be responsible for all the dimension and condition at the job site. Foundation concrete may be placed directly into neat excavations, provided the side of the sides of the excavation are stable. Where caving occurs, provide shoring. Type and method of the shoring shall be at contractor's option.
- The excavation shall be kept dray at all the times. Ground water, if encountered, wall be pumped from the excavation. Concrete shall be laboratory designed, machine mixed, producing 3K PSI (21K MPA) at 28 days. Cement shall be tested PCC to ASTM C150, type#2 only.
- Aggregates shall confirm to ASTM C33 and B grade per standard specification. Maximum size of aggregate shall be 38 mm. reinforcing steel shall be deformed bars confirming to ASTM A615, grade 60 (60K PSI or 414 MPA).
- Hooks and bends shall confirm to ACI Standard 318, latest revision. Inside diameter off hooks and bends shall be at least 6 bar diameters. Provide spacer bars, chairs, spreaders, blocks etc. as required to positively hold the steel in place before concrete is poured.
- Concrete shall be maintained above 10 degree in a moist condition for at lease 7 days after placement. Where exterior wall face requires shoring and forming, the forms shall be substantial and sufficiently tight to prevent leakage. Forms shall not be removed until the concrete is seven days only. Backfilling shall be done by depositing and tamping into place clean sand or pouring lean concrete, to 95% compaction.
- Water jetting is not allowed. conduit and pipes of aluminum shall not be allowed. Construction
  joints not indicated on the drawing shall not be allowed. Where a construction joints is to be made,
  the surface of the concrete shall be thoroughly cleaned and all laitance and standing water
  removed.
- The existing drainage is made of concrete reinforced circular pipe with 18-inch diameter. Proposed delta barrier will have crossing in perpendicular way of almost 60-inch. There should be a gap of 9-12 inch between base of barrier and top of the drainage pipe. The clearance is not

sufficient, and it does appear that the existing pipe will be impacted during excavation for the barrier. Contractor area advised to perform hand digging closer to the pipe crossing (should be part of their sequencing and operating procedures). Expose the entire crossing and a add 8 inches thick reinforced concrete pad around delta barrier base as part of structural fill the pipe at barrier crossing. There should be extension of reinforced slab a minimum of 3 feet over delta barrier crossing in all directions

• Control booth and delta barrier needs to be connected with proper size conduit (6 inch to 18 inch) as per site condition and approved by COR.

### 5. Installation requirements

- Pre-Construction submittals at minimum requires following package from contractor:
  - o Electronic schematic layout and elevation details for exact locations of Delta Barrier
  - o Sump pump location, contour for same, elevation and location of sump pump
  - o Control booth location,
  - o Electrical conduiting details with trenching plan
  - o Proper drainage system for Delta Barrier
  - Contractor should verify and confirm measurement of existing layout at site to prepare these construction drawings.
  - o Detailed working methodology with work schedule indicating any possible closure of Singh House gate where this Delta Barrier will be installed.
  - o Detailed engineering calculations and drawing for 8" concrete slab between drainage and Delta Barrier which should be M25 (25 Ton load).
  - No installation shall begin until approvals of the Pre-Construction Submittals are accepted by the COR.
  - The contractor shall provide the COR with a formal written time-schedule before initiation of works.
- All materials to be used shall be indicated at the bidding and approved by the COR and they shall be new unless noted otherwise.
  - All materials, equipment is to be used or installed for this project, shop drawings, working schedule shall be approved in advance by the Contracting Officer
  - Debris and other waste materials must not be allowed to accumulate on the site. Contractor will transport materials off U.S. government property and legally dispose of them on daily basis. Contractor must not burn any materials on site.
  - o Ensure that construction workers do not stray into restricted areas on the compound.
  - o All materials, equipment and finished works shall be kept in good condition. The complete work shall be the Contractors property until handed over to the U.S Government.
- The Contractor will be provided with a storage and staging area as determined by the COR. The
  Contractor shall be responsible for restoring the area to its original condition at the completion of
  the work. The Contractor shall be responsible for repair of any damage incurred to buildings or
  pavement because of storage activities. The Contractor is responsible for obtaining any additional
  off compound storage areas as required.
- Control booth should be fabricated with prefabricated aluminum partition and glass. Size of the control booth will be 8 x 8 feet (tentative size) and total materials shall be used around 125 cubic feet.

• Sump pump: Contractor will be responsible for design, installation of sump pump for delta barrier system.

### 6. CONTENT OF PROPOSAL FROM CONTRACTORS:

- Provide cost for all the Work Specified in Project description#1 to 5
- Work schedule Outlining activities that justify that entire work is completed within time frame.
- Provide Safety Plan for entire project that includes excavation work, drainage work, use of crane to unload delta barrier, and delta barrier installation work.
- Provide documentation for similar type of civil/electronics/electromechanical work carried out by contractor

#### 7. SELECTION CRITERIA

Contractors will be selected based upon their prior work experiences, cost estimates, availability
of sufficient technical personnel to manage special project.

#### 8. PAYMENT PROCESS

- Contractors will be paid according to the percentage of work completed on timely basis upon submission of the bill. US government will not provide advance payment as well as material in site requests.
- Payment will be made 3-4 weeks after the submission of the bill. VAT shall be charged as applicable.

### 9. MILESTONES

 The Contractor shall commence work under this contract promptly, execute the work diligently, and achieve final completion and acceptance including final cleanup of the premises within the period specified.

#### • Milestones:

- o Contractor Pre-Proposal Site Visit TBD
- Award of Contract & Notice to Proceed TBD
- o Pre-Construction Submittals TBD
- o Embassy Submittal Review TBD
- Construction Begins TBD after NTP
- o Construction TBD

### 10. **SECURITY**

a. While on Embassy property, all personnel must be escorted at all times. Any personnel found unescorted will be removed from the project immediately.

- b. Job site personnel will be issued a visitors badge by the Security staff and this badge must be worn at all times.
  - Once contractor receives and accepts awarded contract, contractor will furnish following details within seven (7) days from issue of signed contract:
  - List of names of all workers identified by contractor requiring site access.
  - The length of security vetting time period is 6 to 8 weeks.
  - The awarded contractor should fill up the attached biographic form and submit to Embassy.



Biographic Form for Temporary Workers.c

- List of all vehicle type, year, and license numbers that will require site access.
- Contractor shall furnish all tools, materials and labor to perform and complete work.
- Contractor is required to keep work site neat and presentable condition at all times and, at his
  own cost.
- Contractor must visit the site personally and prepare technical specifications for different type of paints.
- Contractor shall be responsible for removal and disposal of all painting debris.

### 11. SAFETY

- a. The contractor shall ensure that all equipment used during the project is in safe operating condition.
- b. Contractor employee shall attend safety briefing provided by the US Embassy Safety team before commencing this project.
- c. The COR, POSHO and Escort reserves the right to stop the work if any unsafe conditions are observed or encountered.
- d. Contractor shall be responsible for any injuries or accidents which occur during this project.
- e. Contractor shall be responsible for any damage to building, property and ground associated near buildings.
- f. Follow safety guidelines bases on hazard description listed below:

HAZARD DESCRIPTION	CHECK ALL THAT APPLY
<b>BARRICADING AND FENCING</b> - To inform contractors of their responsibility to maintain a safe and accessible path-of-travel for all pedestrians, including those with disabilities. Barricades act as warning devices, alerting others of the hazards created by construction activities, and should be used to control vehicular and pedestrian traffic safely through or around the work site.	<u>Y</u>
CONTRACTOR'S GENERAL RESPONSIBILITIES - The following is required of all construction contractors and subcontractors:	<u>Y</u>
<ul> <li>Contractors must demonstrate understanding of their responsibilities under Post Managed Construction Project safety program by addressing hazards in pre- planning processes and meetings.</li> </ul>	

- Prior to starting a project, each contractor is required to review the work site and identify hazards that may occur while performing the job.
- Prior to starting a project, the contractor shall contact Contracting Officer, to ensure they have received pertinent information for the project including requirements for permits, floor plans, utility information, asbestos, lead based paint, and other hazardous materials.
- Contractors must provide their employees with a safe and healthful condition of employment.
- Contractors are expected to provide a "competent person" to implement Site health and safety plan and to oversee its compliance. A competent person is an individual who, by way of training and/or experience, is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, is designated by the employer, and has authority to take appropriate actions.
- The Contractor shall be responsible for the removal and/or disposal of hazardous waste generated from the project. Hazardous waste generated from the project must be removed and disposed of in accordance with the Department's Hazardous Waste Management Policy as well as local rules and regulations.
- The contractor shall ensure proper safety; health and environmental requirements of EM 385-1-1 applicable to their project are followed.
- The contractor shall ensure individuals working at the site are trained and are aware of potential hazards. Contractors shall ensure that these individuals are provided with proper safety equipment to prevent accidental injury in accordance with the requirements of the contract.
- Contractors will report accidents to POSHO.

**ELECTRICAL SAFETY** - To inform contractors of their responsibilities when performing work that may impact electrical systems on posts' properties.

<u>Use anytime a contractor may impact the electrical system.</u> Such activities include, but are not limited to:

- . Installation of electrical systems, components, machinery, and equipment.
- . Alterations of electrical systems, components, machinery, and equipment.
- . Maintenance of existing systems and equipment.

Y

- Demolition of existing systems.
  - Temporary planned outages.
  - Tests and diagnostics.

# Contractors are required to:

- Identify any potential sources of electrical energy likely to cause death, injury, or serious physical harm.
- Notify the POSHO and the Project Manager of impact activities prior to the start of work.
- Coordinate planned outages with POSHO and the Project Manager.
- Ensure all employees performing impact activities have received sufficient training in compliance with post's, OBO's and local regulations.
- Ensure all employees are provided adequate personal protective equipment as required by the regulations mentioned below.
- Ensure all work is performed in accordance with the guidelines of federal and local regulations listed below.
- Follow Lock-Out/Tag-Out procedures for the Control of Hazardous Energy as specified in the OSHA 29 CFR 1910.147 Standard, and in the Post's Lock- Out/Tag-Out program.

<b>EYE PROTECTION</b> -	afety glasses with side shields worn at all times; n	10
exception		

**HAND AND POWER TOOL SAFETY** - To inform contractors of their responsibilities with respect to safe working conditions of tools and equipment.

<u>Use anytime contractor utilizes hand and portable power tools and other hand-held equipment.</u>

### Contractors are required to:

- Ensure the safety of tools and equipment used by its employees.
- Inspect at regular intervals and maintain in good repair all tools in accordance with the manufacturers' specification.
- Ensure that all operating and moving parts operate and are clean.
- Require that appropriate personal protective equipment be worn for hazards that may be encountered while using portable power tools and hand tools.

Y

Y

Ensure that tools are used for their intended purposes.	
<ul> <li>Ensure that all employees receive instruction on regulations and the safe use of each power tool.</li> </ul>	
<ul> <li>Provide owners' manuals including manufacturer's specifications and suggested work practices and make available upon request to all employees required to use the equipment.</li> </ul>	
NOISE/ Hearing protection requirements - To inform contractors of their	Y
responsibilities to their employees and post's community with respect to construction generated noise pollution. Post may impose additional time limitations on particular projects expected to make noise.	1
Use for any construction project that generates noise.	
Contractors are required to:	
Identify noisy equipment and noisy operations and plan their work to provide maximal noise protection to employees and the community.	
• Schedule noisy operations during off hours if possible. Noisy construction or demolition can be performed only during the hours of 7:00 am through 7:00 pm on weekdays, and the generated noise cannot exceed 80 dB except for pile driving.	
<ul> <li>Provide a plan for how a contractor will comply with these regulations to the POSHO in advance of the project.</li> </ul>	
Erect barriers to isolate occupied space from noisy operations when required.	
• Implement a hearing conservation program when employees are exposed to 80 dB or more in an 8 hour day. These programs include annual audiometric testing and require hearing protection devices, such as earplugs.	
<ul> <li>Implement engineering or administrative noise controls when exposure exceeds</li> <li>85 db. Engineering controls include redesigning the space to reduce machinery noise, replacing machinery with quieter equipment, enclosing the noise source or enclosing the noise receiver. Administrative controls include mandating the length of time an employee can be exposed to a particular noise source.</li> </ul>	
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<b>PERSONAL PROTECTIVE EQUIPMENT</b> - To inform contractors of their responsibilities under post's personal protective equipment standard while performing work at the Post.	Y

# Use for all post managed construction projects:

# Contractors are required to comply with the following provisions:

- Protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be used wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.
- Each affected employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
- Each affected employee shall use appropriate respiratory protection when potentially exposed to air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors and when such hazards cannot be reduced or eliminated by effective engineering controls.
- Each affected employee shall wear protective helmets when working in areas
  where there is a potential for injury to the head from falling objects. Protective
  helmets shall also be worn to reduce electrical shock hazards when near expose
  electrical conductors which could contact the head.
- Each affected employee shall wear protective footwear when working in areas
  where there is a danger of foot injuries due to falling and rolling objects, or
  objects piercing the sole, and where such employee's feet are exposed to
  electrical hazards.
- Each affected employee shall wear protective ear wear whenever noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 80 decibels and when engineering controls cannot reduce or eliminate the hazard.
- Each affected employee shall wear protective gloves when working in areas where hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.
- Contractors shall provide training and upon completion, each employee shall be tested, and certified in writing by the trainer. If at any time the trained employee changes work activities requiring different PPE, or exhibits lack of understanding of the required PPE, the employee shall be retrained and re-certified.

**TRENCHING AND EXCAVATIONS** - To inform contractors of their responsibilities while performing trenching and excavation operations at posts.

Y

Use anytime drilling, digging and trenching are performed.

Contractors must apply the following safety controls:

- Before any excavation work begins, underground utilities shall be identified and the location marked of underground pipes, electrical conductors, gas lines or other structures.
- Evaluation is required of the trenching site by a "competent person" who knows and is trained to identify soil types, proper protective systems and hazardous conditions.
- Contact local authorities for procedures and notification requirements.
- Conduct a daily inspection of the excavation and the adjacent areas prior to work and as needed during the workday. If there are any unsafe conditions, work shall stop in the excavation and personnel removed until the problems are corrected.
- Monitor and recognize hazardous atmospheres and conditions such as vibration, external loads, weather conditions, ground water conditions and confined spaces.
- Check all protective material or equipment for any damage.
- When excavations are deeper than 4 feet, ladders or steps shall be located so that a worker does not need to travel more than 25 feet in the excavation before being able to exit. See OSHA's confined space standard 29 CFR-1910.148 for testing before employees enter excavations greater than 4 feet in depth.
- Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with OSHA Standard 1926, Subpart P.
- Examination of the ground by a competent person for excavations less than five (5) feet in depth must present no indication of a potential cave-in hazard. If a cave-in hazard exists, protective systems are required.
- When excavations are deeper than five (5) feet, the sides shall be provided with a protective system (shored, braced or sloped sufficiently) to protect against hazardous ground movement.
- When heavy equipment will be operated nearby, the shoring or bracing shall be able to withstand this extra load regardless of the depth of the excavation. For any excavation that a person will enter, all dirt, debris and excavation material shall be effectively stored or retained at least two (2) feet from the edge of the excavation.
- Adequate protection from hazards associated with water accumulation should be in place before working in excavations.
- Signs and Barricades shall be displayed at all excavation/trenching sites.

- All excavations into which a person could fall or trip shall be guarded.
   While work is being performed in or near the opening, the guards surrounding the area shall be maintained.
- Barricades at least 3 to 5 feet high shall be spaced no further than ten (10) feet apart and yellow and black "Caution, Do Not Enter" construction tape shall be stretched securely between the barricades.
- A registered professional engineer (or foreign equivalent) shall design excavations more than twenty feet deep.
- Excavations should be covered and not left open overnight, whenever possible.

#### **Attachments:**

- Annex#1 Section view of proposed installation of Delta barrier
- Annex#2 Dimension and sump details for delta barrier
- Annex#3 Delta barrier general arrangement
- Annex#4 Delta barrier model HD200 leaflet
- Annex#5 Delta barrier foundation specification
- Annex#6 Delta barrier and control booth location in Singh house